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LCD DISPLAYS

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LCD, or Liquid Crystal Display, technology has advanced very rapidly since it's initial inception over a decade ago for use in laptop computers. Technical achievement has resulted in brighter displays, higher resolutions, reduced response times, and cheaper manufacturing processes. It has also allowed manufacturers to greatly increase screen size. Whereas most introductory LCD screens only offer 12 to 14-inches of viewable area, the newest LCD monitors now are available at over 23 inches, with LCD TVs going even further - up to 50-inches. So, how do LCD monitors work?

Liquid crystal displays work by trapping a liquid crystal solution between two panes of polarized glass. The liquid crystals can be manipulated through an applied electric voltage so that light is allowed to pass or is blocked. By carefully controlling where and what wavelength (color) of light is allowed to pass, the LCD monitor is able to display images. A backlight provides the LCD monitors brightness, and generally has a lifespan of approximately 60,000 to 80,000 hours - about 20 - 25 years of daily 8-hour usage.

Over the years, many improvements have been made to LCD technology to help enhance resolution, image sharpness and response time. One of the latest such advancements is TFT, or thin film transistors. TFT-LCDs make use of a very thin transistor that is applied to glass during the manufacturing process.. The TFT further acts as a switch, allowing control of light at the pixel-level, greatly enhancing resolution and image sharpness. This has been particularly important for improving LCDs ability to display small-sized fonts and images clearly.

Other advances have allowed LCDs to greatly reduce liquid crystal cell response times. Response time is basically the amount of time it takes for a pixel to 'change colors'. In reality, response time is the amount of time it takes a liquid crystal cell to go from being active to inactive. Response time is described in milliseconds, with the best LCD monitors now coming in at 20 ms and less in response time. Older models often averaged 25-45 ms, leading to a blurring effect when the monitor displayed motion, particularly during gaming or video playback.

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